**Revision Date: March 2023**

Specifications Guide – Section 07 21 13.21
Under-Slab Board Insulation

iFLEXFOAM Under-Slab Board Insulation



ISOLOFOAM GROUP | 1338, boulevard Vachon Nord, Sainte-Marie (QC) G6E 1N4 CANADA

T.: 418-387-3641 | 1-800-463-8886 | F.: 1-877-463-8886 | isolofoam.com | info@isolofoam.com

**Isolofoam Group Spec Note: This master specification is written to include SPEC NOTES noted as “Isolofoam Group Spec Note” in order to assist designers in their decision-making process. SPEC NOTES precede the text to which they apply. Although written by a professional specification writer, this section should serve as a guideline only and should be edited by a knowledgeable person to meet the requirements of each specific project.**

**Text indicated in bold and by square brackets is optional. Make appropriate decisions and delete the optional text as well as the brackets in the final copy of the specification. Delete or hide the SPEC NOTES in the final version of the document.**

This specification section is written to follow the recommendations of the Construction Specifications Institute/Construction Specifications Canada (CSI/CSC) such as MasterFormatTM, SectionFormatTM, and PageFormatTM. It is also written with metric and imperial units of measurement.

Values in this specification have been provided in metric units followed by imperial units in brackets. Where necessary, some of the values have been converted and rounded from imperial values.

**This Specification specifies board insulation products and related accessories. It is based on iFLEXFOAM by Isolofoam Group.**

Isolofoam Group manufactures and sells building insulation materials. Although the specification was written by a professional specification writer, Isolofoam Group does not practice architecture or engineering. Therefore, the design responsibility remains with the architect, engineer, or consultant. We trust the information provided within will be of some assistance. It is based upon data considered to be true and accurate and is offered solely for the user's consideration, examination and verification. Nothing contained herein is representative of a warranty or guarantee for which Isolofoam Group can be held legally responsible. Isolofoam Group does not assume any responsibility for any misinterpretation or assumptions the reader may formulate.

1. GENERAL
	1. SUMMARY
		1. Section Includes: Labour, materials, products, equipment and services to complete the board insulation specified herein. This includes, but is not limited to:
			1. Expanded polystyrene board insulation for application to slab-on-grade floors (under slabs).
			2. Auxiliary materials and accessories required for a complete installation.
	2. RELATED REQUIREMENTS
		1. Related Requirements: Specifications throughout all Divisions of the Project shall be read as a whole, and may be directly applicable to this Section.
		2. Related requirements provided below are for convenience purposes only.

Isolofoam Group Spec Note: The following list of sections is provided as a sample only. Edit to meet the requirements of the project. Limit section listings to only those sections containing specific information that would directly affect the work of this section. Do not include Division 01 sections in this list.

* + - 1. Section **[03 30 00, Cast-in-place Concrete]**: for provision of cast-in-place concrete.
			2. Section **[07 21 00, Thermal Insulation]**: for provision of other insulation materials.
			3. Section **[07 26 00, Vapour Retarders]**: for provision of materials acting as vapor retarder in the building envelope.
			4. Section **[07 27 00, Air Barriers]**: for provision of air barrier systems.
			5. Section **[07 92 00, Joint Sealants]**: for provision of joint sealants between the work of this Section, and other construction.
	1. REFERENCE STANDARDS
		1. The latest published edition of a reference shall be applicable to this Project unless identified by a specific edition date.
		2. All reference amendments adopted prior to the Bid Closing date of this Project shall be applicable to this Project.
		3. All materials, installation and workmanship shall comply with all applicable requirements and standards.
		4. ASTM International
			1. ASTM C203: Standard Test Methods for Breaking Load and Flexural Properties of Block-Type Thermal Insulation.
			2. ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
			3. ASTM D1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
			4. ASTM D2842: Standard Test Method for Water Absorption of Rigid Cellular Plastics.
			5. ASTM E96/E96M: Standard Test Methods for Gravimetric Determination of Water Vapor Transmission Rate of Materials.
			6. ASTM E2178: Standard Test Method for Determining Air Leakage Rate and Calculation of Air Permeance of Building Materials.
		5. International Organization for Standardization
			1. ISO 14025: Environmental labels and declarations – Type III environmental declarations – Principles and procedures.
			2. ISO 9001:2015: Quality management systems – Requirements.
		6. Underwriters Laboratories of Canada
			1. CAN/ULC S102.2: Standard Method of Test for Surface Burning Characteristics of Flooring, Floor Coverings, and Miscellaneous Materials and Assemblies.
			2. CAN/ULC S701.1:2017: Standard for Thermal Insulation, Polystyrene Boards.
	2. ADMINISTRATIVE REQUIREMENTS
		1. Pre-installation Meeting: Schedule, and conduct pre-installation meeting at Project Site, in order to coordinate work of this Section, with work of related Subcontractors.
			1. Ensure attendance of Subcontractor performing work of this Section and representatives of manufacturers and fabricators involved in, or affected by, installation and coordination with other materials and installations that have preceded or will follow. Advise Consultant and Owner in advance of scheduled meeting dates.
			2. Agenda: As a minimum, include the following:

Isolofoam Group Spec Note: Delete “air leakage testing” from paragraph below if in-situ air leakage testing is not required for the project

* + - * 1. Sequence of construction, coordination with substrate preparation, materials approved for use, compatibility of materials, coordination with installation of adjacent and covering materials, **[air leakage testing,]** protection of installed materials and details of construction.
				2. Review progress of other construction activities and preparations for the particular activity under consideration.
			1. Record significant discussions, agreements, and disagreements, including required corrective measures and actions.
			2. Reporting: Distribute minutes of the meeting to each party present and to other parties requiring information.
		1. Sequencing:
			1. Sequence work to permit installation of materials in conjunction with related materials and envelope seals.
	1. ACTION AND INFORMATIONAL SUBMITTALS

Isolofoam Group Spec Note: Edit text in square brackets to reflect the specifics of the project.

* + 1. Make Submittals in accordance with provisions indicated in **[Section 01 33 00, Submittal Procedures.]**
		2. Product Data: Submit product literature and data sheets for board insulation indicating product features, performance criteria, physical dimensions, finishes and limitations.
			1. Submit WHMIS Safety Data Sheets (SDS) in accordance with requirements of **[Section 01 33 00, Submittal Procedures.]**
		3. Sustainable Design Submittals:
			1. Building Product Disclosure and Optimization: To promote the use of environmentally and health-conscious construction materials, manufacturer must provide publicly available information as follows:

Isolofoam Group Spec Note: Retain text in square brackets below if the project is pursuing LEED V4 credits related to building product disclosure and optimization.

* + - * 1. Environmental Product Declarations (EPD): Submit industry-wide (generic) EPD conforming to ISO 14025 **[or other approved environmental product declaration framework recognized by CaGBC]**.
				2. General Emissions Evaluation Documentation: Submit valid “GREENGUARD Gold Standard for Chemical Emissions for Building Materials, Finishes and Furnishings” certificate issued by UL Solutions certifying that the specified rigid insulation meets the low emission requirements for volatile organic compounds (VOCs). Website: https://spot.ul.com/.
		1. Shop Drawings: Show the following:
			1. Locations and extent of insulation boards and details of typical conditions.
			2. Intersections with other envelope assemblies and materials.
			3. Details showing how joints in construction will be bridged, treatment of inside and outside corners, and sealing of miscellaneous penetrations such as conduits, pipes, electric boxes and similar items.
			4. Details of interfaces with other materials that form part of building envelope assemblies.
		2. Quality Assurance Submittals: Submit following in accordance with Section **[01 45 00, Quality Control]**.
			1. Certificates: Submit proof of manufacturer's ISO 9001 registration and compliance.
			2. Manufacturer's Instructions: Submit manufacturer's installation instructions and special handling criteria, installation sequence, and cleaning procedures.

Isolofoam Group Spec Note: Edit text below to reflect the applicable building code to the jurisdiction of the project.

* + 1. Evaluation Reports: Submit evaluation reports from CCMC or similar third-party reports published by evaluation bodies recognized by authorities having jurisdiction demonstrating compliance with requirements of the **[National Building Code of Canada]**.
	1. QUALITY ASSURANCE
		1. Sample Warranties: Submit sample warranties for extended warranties indicated in this Section for Consultant's review.
		2. Manufacturer Qualifications:
			1. Provide Products from a manufacturer with minimum 10 years of experience and capable of providing board insulation that meets or exceeds performance requirements indicated in this Section.
			2. Manufacturer must be an ISO 9001 registered company.
		3. Applicator Qualifications:
			1. Company specializing in performing work of this Section with minimum **[5]** years documented experience with installation of building envelope products specified herein.

Isolofoam Group Spec Note: Edit text in square brackets to reflect the specifics of the project.

* + 1. Mock-up:
			1. Construct mock-up in accordance with Section **[01 45 00, Quality Control]** representative of typical primary board insulation assemblies including substrate and typical penetrations.
			2. Mock-up must be a minimum 2.5 m long by 2.5 m wide (8 ft long by 8 ft wide) and include materials and accessories identical to those that will be used in floor assembly.
			3. Locate mock-up where directed by Consultant.
			4. Allow **[24]** hours for inspection of mock-up by Consultant before proceeding with remainder of work of this Section.

Isolofoam Group Spec Note: Delete text in square bracket below if in-situ air leakage testing is not required for the project.

* + - 1. Purpose of mock-up: To establish benchmark for the work of this Section **[and for the purposes of air leakage testing]**.

Isolofoam Group Spec Note: Edit paragraph below to establish whether mock-ups must be demolished at the end of the Project, or if they can be incorporated into the final building.

* + - 1. Mock-up at time of Substantial Performance of the work: **[Demolish and remove.]** **[May be incorporated in the completed work if intact and undamaged.]**
		1. Source Limitations: Obtain primary boards specified in this Section from a single manufacturer. Obtain secondary materials such as adhesives, tapes and sealants from sources compatible with primary board insulation.
	1. DELIVERY, STORAGE AND HANDLING
		1. Deliver, store and handle materials in accordance with Section **[01 61 00, Product Requirements]** and in accordance with manufacturer's written instructions.
		2. Protect boards from physical damage and from deterioration due to moisture, UV, heat, soiling, and other sources that may cause deleterious effects.
		3. Do not expose to sunlight except as necessary for installation and concealment.
		4. Protect against ignition at all times.
		5. Promptly complete installation and concealment of boards in each area of construction. Proceed with pouring concrete slab as soon as practical after installation of insulation boards. If boards will be left exposed for an extended period, install protective covering to prevent damage due to related work or degradation due to weather and environmental factors.
	2. FIELD CONDITIONS
		1. Weather Conditions: Begin installation only when current and anticipated weather conditions allow for proper assembly of boards in accordance with manufacturers' written instructions and warranty requirements.
1. PRODUCTS
	1. MANUFACTURERS
		1. Materials specified in this Section are based on products by Isolofoam Group.; 1338, boulevard Vachon Nord, Sainte-Marie (QC) G6E 1N4; T.: 418-387-3641; 1-800-463-8886; F.: 1-877-463-8886; Website: [isolofoam.com](https://isolofoam.com/en/) as listed in this Specification.

Isolofoam Group Spec Note: Retain one of the two options below to either permit or preclude other manufacturers from bidding on the work of this Section.

* + 1. **[Substitution Limitations: No further substitutions are acceptable.]**

**OR**

* + 1. **[Substitution Limitations: Conforming to requirements of Section 01 25 00, Substitution Procedures and as follows:**
			1. **Consultant will consider requests for substitution if received [10] days before Bid Closing Deadline. Requests received after that time will be rejected. Consultant will consider requests for substitution when following conditions are satisfied:**
				1. **Requests for substitution include a list of at least five similar projects of equivalent size where products have been installed for a minimum of five years.**
				2. **Requested substitution does not require extensive revisions to the Contract Documents.**
				3. **Requested substitution is consistent with the Contract Documents and will produce indicated results.**
				4. **Requested substitution will not adversely affect construction schedule.**
				5. **Requested substitution provides specified warranty.]**
	1. DESIGN AND PERFORMANCE REQUIREMENTS
		1. Provide insulation based on thicknesses indicated on Drawings to provide the minimum thermal resistances necessary to prevent moisture condensation and to maintain comfortable conditions for building occupants.
		2. Insulation boards provided under this Section must conform to CAN/ULC-S701.1 and other requirements specified in this Section.
		3. Insulation boards used for the work of this Section must not contain blowing agents to contribute to thermal resistance. Otherwise, the long-term thermal resistance (LTTR) value specified in CAN/ULC-S701.1 must be used for design and compliance purposes.
	2. EXPANDED POLYSTYRENE INSULATION FOR SLAB-ON-GRADE APPLICATION
	(110 kPa / 16 psi)

Isolofoam Group Spec Note:
The text below specifies Isolofoam Group’s iFLEXFOAM 160 (110 kPa / 16 psi) product.

* + 1. Rigid expanded polystyrene insulation panel (EPS): complying to CAN/ULC-S701.1 (Type 2), with factory-laminated polypropylene membrane on each face, clipping system ensuring continuity of insulation made up of secured panels and of minimum physical characteristics specified below:
			1. Acceptable Products: **“iFLEXFOAM 160”** by Isolofoam Group.
			2. Thermal Resistance per 25 mm (1 in.): Not less than RSI 0.71 m2•°C/W (R4.05 ft2•h•°F/Btu) when tested in accordance with ASTM C518.
			3. Compressive Strength: Not less than 110 kPa (16 psi) when tested in accordance with ASTM D1621.
			4. Flexural Strength: Not less than 240 kPa (35 psi) when tested in accordance with ASTM C203.
			5. Air Permeability: Not more than 0.02 L/s•m2 when tested in accordance with ASTM E2178.
			6. Water Absorption: Not more than 2 percent (%) when tested in accordance with ASTM D2842.
			7. Water Vapour Permeance:
				1. Not more than 15 ng/Pa•s•m2 (0.25 perms) when tested in accordance with ASTM E96/E96M, Method A.
				2. Not more than 10 ng/Pa•s•m2 (0.17 perms) when tested in accordance with ASTM E96/E96M, Method B.
			8. Flame Spread Rating (FSR) of 240 or less when tested in accordance with CAN/ULC-S102.2.
			9. Total VOC Emissions: Not more than 0.22 mg/m3 when tested in accordance with CDPH Standard Method v1.2, as required for Greenguard Gold certified products.
			10. Edges: Manufacturer’s custom **“ISOCLICK”** 4-sided edge-clipping system with hinge effect.

Isolofoam Group Spec Note: Edit the text below to reflect the size and thickness of boards required for the project based on the project’s thermal performance criteria.

* + - 1. Sizes: **[1220 mm x 2440 mm (4 ft x 8 ft)]** **[As indicated on Drawings]**.
			2. Thickness: **[32 mm (1-1/4 inches)]** **[48 mm (1-7/8 inches)]** **[64 mm (2-1/2 inches)]** **[76 mm (3 inches)] [102 mm (4 inches)] [As indicated on Drawings]**.
	1. EXPANDED POLYSTYRENE INSULATION FOR SLAB-ON-GRADE APPLICATION
	(140 kPa / 20 psi)

Isolofoam Group Spec Note:
The text below specifies Isolofoam Group’s iFLEXFOAM 200 (140 kPa / 20 psi) product.

* + 1. Rigid expanded polystyrene insulation panel (EPS): complying to CAN/ULC-S701.1 (Type 3), with factory-laminated polypropylene membrane on each face, clipping system ensuring continuity of insulation made up of secured panels and of minimum physical characteristics specified below:
			1. Acceptable Products: **“iFLEXFOAM 200”** by Isolofoam Group.
			2. Thermal Resistance per 25 mm (1 in.): Not less than RSI 0.74 m2•°C/W (R4.20 ft2•h•°F/Btu) when tested in accordance with ASTM C518.
			3. Compressive Strength: Not less than 140 kPa (20 psi) when tested in accordance with ASTM D1621.
			4. Flexural Strength: Not less than 300 kPa (44 psi) when tested in accordance with ASTM C203.
			5. Air Permeability: Not more than 0.02 L/s•m2 when tested in accordance with ASTM E2178.
			6. Water Absorption: Not more than 2 percent (%) when tested in accordance with ASTM D2842.
			7. Water Vapour Permeance:
				1. Not more than 15 ng/Pa•s•m2 (0.25 perms) when tested in accordance with ASTM E96/E96M, Method A.
				2. Not more than 10 ng/Pa•s•m2 (0.17 perms) when tested in accordance with ASTM E96/E96M, Method B.
			8. Flame Spread Rating (FSR) of 240 or less when tested in accordance with CAN/ULC-S102.2.
			9. Total VOC Emissions: Not more than 0.22 mg/m3 when tested in accordance with CDPH Standard Method v1.2, as required for Greenguard Gold certified products.
			10. Edges: Manufacturer’s custom **“ISOCLICK”** 4-sided edge-clipping system with hinge effect.

Isolofoam Group Spec Note: Edit the text below to reflect the size and thickness of boards required for the project based on the project’s thermal performance criteria.

* + - 1. Sizes: **[1220 mm x 2440 mm (4 ft x 8 ft)]** **[As indicated on Drawings]**.
			2. Thickness: **[30 mm (1.2 inches)]** **[46 mm (1.8 inches)]** **[61 mm (2.4 inches)]** **[76 mm (3 inches)] [102 mm (4 inches)] [As indicated on Drawings]**.
	1. EXPANDED POLYSTYRENE INSULATION FOR SLAB-ON-GRADE APPLICATION
	(210 kPa / 30 psi)

ISOLOFOAM Group Spec Note:
The text below specifies Isolofoam Group’s iFLEXFOAM 300 (210 kPa / 30 psi) product.

* + 1. Rigid expanded polystyrene insulation panel (EPS): complying to CAN/ULC-S701.1 (Type 3), with factory-laminated polypropylene membrane on each face, clipping system ensuring continuity of insulation made up of secured panels and of minimum physical characteristics specified below:
			1. Acceptable Products: **“iFLEXFOAM 300”** by Isolofoam Group.
			2. Thermal Resistance per 25 mm (1 in.): Not less than RSI 0.75 m2•°C/W (R4.25 ft2•h•°F/Btu) when tested in accordance with ASTM C518.
			3. Compressive Strength: Not less than 210 kPa (30 psi) when tested in accordance with ASTM D1621.
			4. Flexural Strength: Not less than 350 kPa (50 psi) when tested in accordance with ASTM C203.
			5. Air Permeability: Not more than 0.02 L/ s•m2 when tested in accordance with ASTM E2178.
			6. Water Absorption: Not more than 1.8 percent (%) when tested in accordance with ASTM D2842.
			7. Water Vapour Permeance:
				1. Not more than 15 ng/Pa•s•m2 (0.25 perms) when tested in accordance with ASTM E96/E96M, Method A.
				2. Not more than 10 ng/Pa•s•m2 (0.17 perms) when tested in accordance with ASTM E96/E96M, Method B.
			8. Flame Spread Rating (FSR) of 240 or less when tested in accordance with CAN/ULC-S102.2.
			9. Total VOC Emissions: Not more than 0.22 mg/m3 when tested in accordance with CDPH Standard Method v1.2, as required for Greenguard Gold certified products.
			10. Edges: Manufacturer’s custom **“ISOCLICK”** 4-sided edge-clipping system with hinge effect.

Isolofoam Group Spec Note: Edit the text below to reflect the size and thickness of boards required for the project based on the project’s thermal performance criteria.

* + - 1. Sizes: **[1220 mm x 2440 mm (4 ft x 8 ft)]** **[As indicated on Drawings]**.
			2. Thickness: **[30 mm (1.2 inches)]** **[46 mm (1.8 inches)]** **[61 mm (2.4 inches)]** **[76 mm (3 inches)] [102 mm (4 inches)] [As indicated on Drawings]**.
	1. ACCESSORIES
		1. Provide board insulation accessories that are compatible with board insulation materials to produce a complete assembly.
1. EXECUTION
	1. MANUFACTURER'S INSTRUCTIONS
		1. Compliance: Comply with manufacturer's latest written installation publications, including product technical bulletins, handling, storage and installation instructions, and datasheets.
	2. INSPECTION
		1. Verify that surfaces and conditions are ready to fulfill work of this section.
		2. Ensure that surfaces are free of substances that are harmful to board insulation.
		3. Confirm that adhesives are compatible with board insulation products.
		4. Report unsatisfactory or non-conforming conditions to Consultant in writing.
		5. Do not start work until deficiencies have been corrected.
		6. Beginning of work implies acceptance of conditions.
	3. INSTALLATION
		1. Install boards and accessory materials according to manufacturer's written instructions and to provide insulating continuity throughout the building envelope.
		2. Install boards that are undamaged, dry, clean, free of ice and snow, and have not been exposed to any deleterious substances.
		3. Install boards with printed side facing up. Protect from exposure to ultraviolet (UV) radiation from the sun when panels will be exposed for an extended period.
		4. Unless otherwise indicated or necessary, provide insulation in single layer to provide required total thicknesses or to achieve thermal resistance values specified for Project. Offset board joints in multi-layer applications.
	4. INSTALLATION – SLAB-ON-GRADE FLOORS
		1. Install insulation boards according to manufacturer's written instructions.
		2. Place boards on even surface of uniformly compacted fill.
		3. Clip insulation panels together at interlocking edges to maintain continuity of thermal insulation. Avoid damaging factory-laminated membranes.
		4. Ensure panels remain clipped together after installation and during concrete pour of slab.
		5. Unless indicated otherwise, extend insulation **[1220 mm (48 inches)]** **[under entire surface of slabs]** **[to extent indicated on Drawings]** from the perimeter of exterior foundation walls.

Isolofoam Group Spec Note: Retain text below when measures to control air infiltration or soil gas infiltration are required.

* + 1. **[Install soil gas barrier membrane and overlap membrane joints at least [300 mm (12 inches)].**
		2. **Seal the gas barrier membrane with compatible products (e.g., elastomeric sealant, tape, self-adhesive membrane or sealing foam) at junctions, penetrations and perimeter of other spaces.]**
	1. CLEANING
		1. Proceed in accordance with Section **[01 74 00, Cleaning]**.
		2. On completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.
	2. PROTECTION OF WORK
		1. Protect finished work in accordance with Section **[01 61 00, Product Requirements]**.
		2. Protect boards against damage caused by ultraviolet (UV) radiation, adverse weather exposures, physical abuse, and other harmful conditions. Ensure boards are protected from UV radiation when boards will be exposed for an extended period.
		3. Traffic protection after installation: Avoid repeated travel over the boards if concrete or screed placement does not occur immediately after installation of insulation boards. Otherwise, protect insulation boards against damage from subsequent construction activities with rigid protective plywood covering.

**END OF SECTION**